

**What Is Claimed Is:**

1. A hand-held scanner with an impulse radio wireless interface  
5 comprising:

a housing having an elongate shape with a scanning end and a rear end;

optical detector means, located within said housing, for detecting relative intensity of light reflected from a surface, said surface may contain characters or symbols thereon;  
10

an impulse radio interface, interfacing with said optical detector means and in communication with an impulse radio transmitter, wherein said impulse radio transmitter transmits scanned information to a remote location by impulse radio means.  
15

2. The hand-held scanner with an impulse radio wireless interface of claim 1, further comprising a recording means associated with said hand-held scanner for recording voice information for transmission via impulse radio means.  
20

3. The hand-held scanner with an impulse radio wireless interface of claim 1, wherein said remote location is a remote computer.

25 4. The hand-held scanner with an impulse radio wireless interface of claim 3, wherein said remote computer includes an impulse radio transceiver for receiving the scanned information from said hand-held scanner by impulse radio means.

30

5. The hand-scanner of claim 1, further comprising a comparator coupled to said optical detector means for receiving signals corresponding to the relative intensity of light from said optical detector means to determine whether each such signal is  
5 above or below an intensity threshold and means for setting the intensity threshold responsive to the relative intensities of points in an area of view being scanned.

6. The hand-held scanner of claim 1, further comprising an  
10 image splitter for producing two images of a first area of view, said two images being rotated with respect to each other and for providing said two images to said optical detector means.

7. The hand-held scanner of claim 1, further comprising means  
15 for adjusting the magnification of said first optical means and thereby change the size of the first area of view.

8. The hand-held scanner of claim 1, further comprising first  
20 movement means, mounted proximate the scanning end of said housing, for detecting movement of the scanner across a surface when the scanning end of said housing is moved along a line of characters to read the characters through the first area of view.

9. The hand-held scanner of claim 8, further comprising second  
25 movement means, mounted on the side of said housing, for detecting movement of the scanner across the substrate when the side of said housing is moved over a surface line by line to read the characters through the second area of view.

30

10. The hand-held scanner of claim 1, wherein said optical detector means comprises a CCD array for detecting light from a plurality of points in the first area of view and a photodiode array for detecting light from a plurality of points in the  
5 second area of view.

11. The hand-held scanner of claim 1, wherein the impulse radio determines the distance between the hand-held scanner and remote device using impulse radio distance determine techniques.

10

12. The hand-held scanner of claim 11, wherein subsequent to said distance determination, the data rate is modified according to the distance determination.

15 13. The hand-held scanner of claim 1, wherein the scanner gives warning that the scanner is out of range of the remote device based on distance determination determined by impulse radio distance determining techniques.

20 14. A package information assimilation system, comprising:  
a scanner, said scanner comprising an optical digitizer for detecting line bar codes from a surface and a bar code processor for interpreting the output of said digitizer; and  
an impulse radio interface interfacing with said bar code  
25 processor in communication with an impulse radio transmitter for transmitting by impulse radio means the output of said bar code processor.

30 15. The package information assimilation system of claim 14, further comprising a remote processing and storage device including an impulse radio receiver in impulse radio communications with said impulse radio transmitter of said scanner.

16. The package information assimilation system of claim 14,  
further comprising means for adjusting the magnification of said  
optical digitizer and thereby change the size of a first area of  
5 view.

17. The package information assimilation system of claim 14,  
further comprising first movement means, mounted proximate the  
scanning end of said housing, for detecting movement of the  
10 scanner across a surface when the scanning end of said housing is  
moved along a line bar codes to read the bar codes through the  
first area of view.

18. The package information assimilation system of claim 14,  
15 wherein said optical detector means comprises a CCD array for  
detecting light from a plurality of points in the first area of  
view and a photodiode array for detecting light from a plurality  
of points in the second area of view.

20 19. The package information assimilation system of claim 14,  
wherein the impulse radios determine the distance between the  
hand-held scanner and remote device using impulse radio distance  
determination means.

25 20. The package information assimilation system of claim 19,  
wherein subsequent to the distance determination, the data rate  
is modified according to said distance determination.

30 21. The hand-held scanner of claim 19, wherein said scanner  
gives warning that said scanner is out of range of said remote  
device based on distance determination determined by impulse  
radio distance determining techniques.

22. A method of bar code information assimilation, comprising the steps of:

- scanning a bar code with a bar code scanner;
- obtaining information contained within said bar code; and
- 5 transmitting said bar code information to a remote location by impulse radio means.

23. The method of bar code information assimilation of claim 22, wherein said remote location is a remote computer.

10

24. The method of bar code information assimilation of claim 23, wherein said remote computer includes an impulse radio receiver for receiving impulse radio transmissions from said bar code scanner.

15

25. The method of bar code information assimilation of claim 23, further comprising the step of determining the distance from said bar code scanner and said remote computer by impulse radio techniques.

20

26. The method of bar code information assimilation of claim 23, further comprising the step of varying the data rate according to said distance determined from said bar code scanner and said remote computer.

25

27. The method of bar code information assimilation of claim 23, further comprising the step of warning the user of said bar code scanner that said bar code scanner is out of range of said remote computer.

30

28. A method of scanning text information from a hand-held scanner, comprising the steps of:

scanning text with a hand-held scanner, said hand held scanner including an impulse radio interface and an impulse radio transmitter therein; and

transmitting said text information to a remote location by impulse radio means.

29. The method of bar code information assimilation of claim 28, wherein said remote computer includes an impulse radio receiver for receiving impulse radio transmissions from said impulse radio scanner.

30. The method of bar code information assimilation of claim 29, further comprising the step of determining the distance from said bar code scanner and said remote computer by impulse radio techniques.

31. The method of bar code information assimilation of claim 30, further comprising the step of varying the data rate according to said distance determined from said bar code scanner and said remote computer.

32. The method of bar code information assimilation of claim 31, further comprising the step of warning a user of said bar code scanner that said bar code scanner is out of range of said remote computer.

30

33. A computer program product comprising a computer readable medium having computer program code, for executing scanning and impulse radio transmissions, said product including:

conversion process procedure codes for obtaining text  
5 information from a scanning device and converting said text or bar code information into digital information for transmission by impulse radio wireless techniques to a remote computer; and

transmission process procedure codes for transmitting by  
impulse radio means the scanned and converted digital  
10 information.

34. The computer program product of claim 33, further comprising impulse radio distance determination codes for determining the distance between said scanning device and said remote computer.  
15

35. The computer program product of claim 34, further comprising codes that use the distance determination by impulse radio means and vary the data rate of the wireless transmission based on the distance from said scanning device to said remote computer.  
20

36. The computer program product of claim 34, further comprising codes that initiate a warning when the distance determined by impulse radio distance determination techniques from said scanning device to said remote computer exceed a predetermined  
25 limit.